

7600 Multi-Port Series User Manual



7600 Multi-Port Series

Software Release 3.40

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Preface

The *7600 Multi-Port Series Installation Guide* presents information and procedures for installing, configuring, and using the DVTel 7600 Multi-Port Series video servers.

Who Should Read this Manual

This manual is intended for managers, IT system administrators, engineers, and technicians who will use the 7600 Multi-Port Series units. It provides conceptual information on how to configure, install, and operate the units.

This manual assumes that you are familiar with:

- Installation and manipulation of electronic equipment
- General use of computers
- Microsoft Windows operating systems
- Local area networks (LANs) and basic IP data communication concepts and practices
- Pan-tilt-zoom (PTZ) platforms (cameras and keyboards)

How to Use this Manual

This manual contains all the information needed to install, configure, and use a 7600 Multi-Port Series unit.

Contents

The *7600 Multi-Port Series Installation Guide* is divided into the following chapters:

- 1. Overview**—Provides a brief description of the features of the 7600 Multi-Port Series units and illustrations of their casings.
- 2. Configuring and Installing the Unit**—Presents the configuration and installation procedures for the 7600 Multi-Port Series unit.

The manual also includes the following appendixes:

- A. Factory Default Configuration**—Lists the default parameter values of the 7600 Multi-Port Series unit.
- B. RS-422/485 Multidrop Connections**—Presents the 2-wire and 4-wire RS-422/485 multidrop connections.
- C. DHCP Support and APIPA Service**—Explains how the dynamic host configuration protocol server and the Microsoft APIPA service work.
- D. DTE and DCE Connections**—Explains how to differentiate and connect data terminal equipment (DTE) and data communication equipment (DCE).
- E. CLI Access**—Explains how to access the command line interface (CLI) of the unit.
- F. RJ-45 Ethernet Cables**—Presents the pinouts of the straight-through and crossover Ethernet cables.
- G. Technical Specifications**—Lists the complete technical specifications of the 7600 Multi-Port Series unit.

A glossary, an index, and compliance information complete the manual.

Conventions

The following typographic conventions are used throughout this manual:

Visual cue	Meaning
Connect	The name of an interface element you have to act on. A key to press. The value of an interface element.
Advanced > VSIP	Any sequence of steps (in the menu structure of a graphical application, in the navigation structure of a web site, and so on).
<i>connection_name</i>	Text that must be replaced by a user-supplied value. Text representing variable content.
7600 Multi-Port Series.xh	The name of a command, file, or directory. Text that appears on the screen. Examples of user-supplied values.

Related Documentation

In addition to this manual, the following documentation is also available:

- *7600 Multi-Port Series Installation Guide*—Contains the configuration steps and the installation procedure for the 7600 Multi-Port Series unit.
- *Device Configurator User Manual*—Presents the instructions on how to use a proprietary DVTel, Inc. software.

All these documents are contained on the CD shipped with the unit.

Related DVTel Products

You may use the 7600 Multi-Port Series units with the Latitude NVMS system.

Support

If you encounter any problems after reading this manual, contact your local distributor or DVTel representative. You can also browse the Technical Support Knowledge Base, located in the Support section of our website, for solutions to many of the most common problems.

DVTel technical support personnel is available for help with all DVTel hardware and software products.

To reach technical support

On the Web: **Support** tab on www.dvtel.com

By phone: **(888) DVTel 77**, Monday to Friday, from 8 AM to 6 PM EST

By email: **ta@dvtel.com**

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Overview

The 7600 Multi-Port Series video servers are designed for a variety of video monitoring and surveillance applications in which a large number of cameras terminate within the same area. They deliver MPEG4-based video over 10/100Base-T networks. 7600 Multi-Port Series units can be extended over local and wide area networks (LANs and WANs) or over the Internet using ISDN, PSTN, or xDSL routers. They are built on open standards to provide long-term investment protection.

This unit is for indoor use only.

About the 7600 Multi-Port Series

The 7600 Multi-Port Series units are for indoor use only.

Each unit is configured to interface, right out of the box, with the most popular camera data port configuration (4800 baud, 8 data bits, no parity, 1 stop bit).

Physical Characteristics

The below table presents an overview of the 7600 Multi-Port Series encoders' features:

Unit	Video I/O	Data I/O	Optional Audio I/O
7608E	8 inputs	12 input and 3 output dry contacts	1 input and 1 output
7612E	12 inputs	12 input and 3 output dry contacts	1 input and 1 output or 12 inputs (unidirectional)
7612E	24 inputs	12 input and 3 output dry contacts	1 input and 1 output

All units have two independent serial ports for the RS-232 and RS-422/485 protocols, and a reset button.

The encoders can be powered using either individual 12 VDC power supplies or power bricks that support up to units and require wiring harnesses.

Security

Every encoder comes with a unique SSL (secure sockets layer) certificate for securing its IP link. SSL is a commonly used protocol for managing the security of IP message transmission. Therefore, the connections between two units, between a unit and Device Configurator, and between a unit and Latitude NVMS can be secured. SSL secures the I/O, serial port, and VSIP communication data; it does not apply to audio and video transmission.

Video

The 7608E provides DVD-quality video resolution, while the 7612E and 7624E offer a compact, cost-effective solution for sites with high port-counts. The 7608/7612 units offer dual-stream encoding for each video input.

The video frame rates supported by the units are:

- NTSC—1 to 7, 10, 15, or 30 frames per second (fps)
- PAL—1 to 6, 8, 12, or 25 fps

All units can have the following video resolutions:

Resolution	Number of columns	Number of lines	
	NTSC/PAL	NTSC	PAL
CIF	352	240	288
2CIFH	704	240	288
4CIF	704	480	576
All lines	352	480	576
2/3 D1	480	480	576
VGA	640	480	576

The maximum frame rates (in fps) supported by the units are, in *NTSC (PAL)*:

Resolution	Maximum frame rate		
	7608E	7612E	7624E
CIF	30 (25)	30 (25)	30 (25)
2CIFH	30 (25)	15 (12)	7.5 (6.25)
4CIF	30 (25)	10 (7)	3.75 (3.125)
All lines	30 (25)	15 (12)	7.5 (6.25)
2/3 D1	30 (25)	15 (12)	7.5 (6.25)
VGA	30 (25)	15 (12)	7.5 (6.25)

Shipment

Your 7600 Multi-Port Series shipment contains the following items:

- The requested transmitter (encoder) unit
- Rack mount brackets
- The DVTel Device Configurator CD, which contains documentation for the 7600 Multi-Port Series units as well as the Device Configurator application.

The shipment may also contain optional single or multiple-unit power supplies.

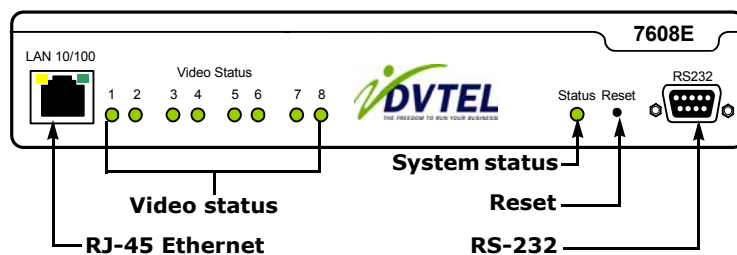
Casing Description

The 7600 Multi-Port Series electronics are enclosed in a non-weatherproof steel casing that is not meant for outdoor use. The front and back panels vary depending on the unit.

7608E

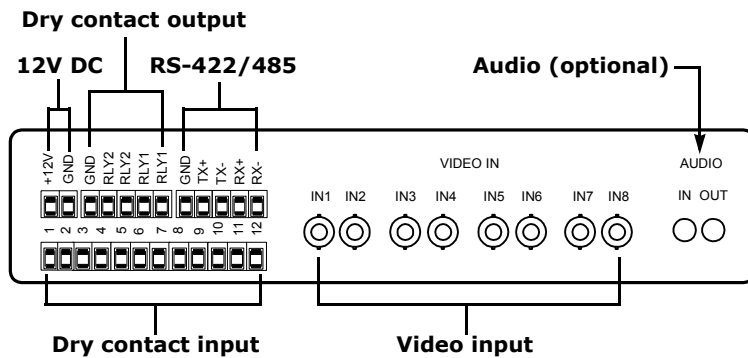
The front panel consists of:

- An RJ-45 jack
- Eight video status LEDs
- A system status LED
- A reset button
- A female DB-9 connector for the RS-232 serial port



The back panel consists of:

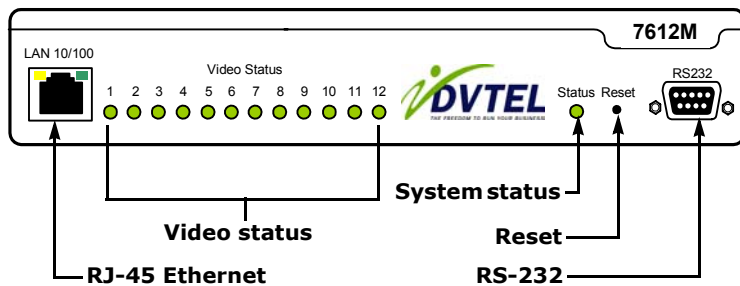
- A 12-pole connector for input power, dry contact outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Eight video input BNC connectors
- An optional set of I/O audio connectors



7612E

The front panel consists of:

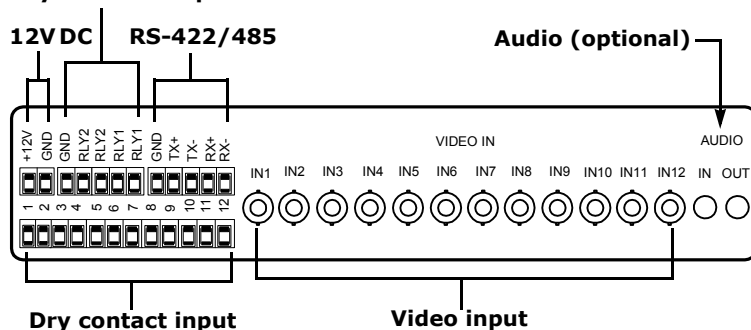
- An RJ-45 jack for Ethernet connection
- Twelve video status LEDs
- A system status LED
- A reset button
- A female DB-9 connector for the RS-232 serial port



Two versions of the back panels exist, since the units can have 1 or 12 audio inputs. The back panel of the single-audio-input version consists of:

- A 12-pole connector for input power, dry contact outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Twelve video input BNC connectors
- An optional set of I/O audio connectors

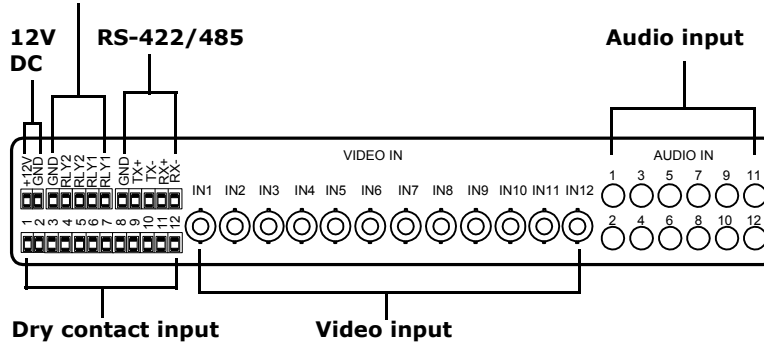
Dry contact output



The back panel of the 12-audio-input version consists of:

- A 12-pole connector for input power, dry contact outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Twelve video input BNC connectors
- Twelve audio input connectors

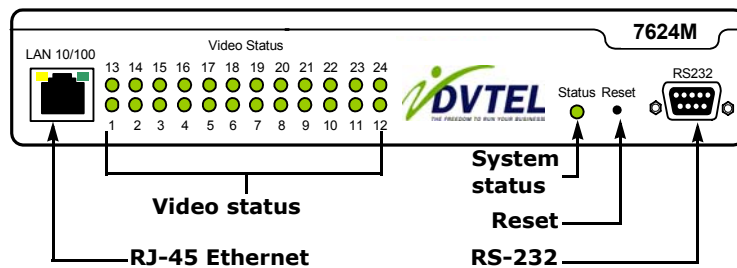
Dry contact output



7624E

The front panel consists of:

- An RJ-45 jack
- Twenty-four video status LEDs
- A system status LED
- A reset button
- A female DB-9 connector for the RS-232 serial port

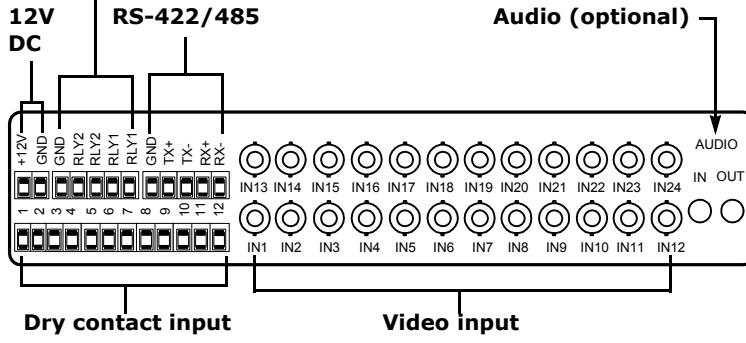


The back panel consists of:

- A 12-pole connector for input power, dry contact outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Twenty-four video input BNC connectors
- An optional set of I/O audio connectors



Dry contact output



2

Configuring and Installing the Unit

To prepare your 7600 Multi-Port Series unit for operation, you will need to perform the following steps:

- Basic configuration, mainly for communication and serial connection
- Physical installation in its final location
- Connection to the serial ports

Remember that your unit is an indoor product that should not be used outdoors.

Configuring the Unit

To configure a unit, you will need to use the Device Configurator application included on the CD shipped with the encoder. You will also need a crossover or straight-through Ethernet cable. The crossover cable is to directly connect the unit to a computer; the straight-through cable is to integrate the encoder to your network. For detailed pinouts, see page 26.

Computer Requirements

The minimum software and hardware requirements for the host computer used to configure 7600 Series units are

- Windows 2000 Service Pack 2 or higher, or Windows XP
- An Ethernet network card
- A serial port (not through a USB converter)

Setting Unit Parameters

The first step in installing an 7600 Multi-Port Series unit is to change its IP address to ensure compatibility with an existing network. The default IP addresses of all units are based on the APIPA service and will be in the range 169.254.X.Y, where X and Y are based on the MAC address of the individual unit; for more information about the APIPA service, see page 33.

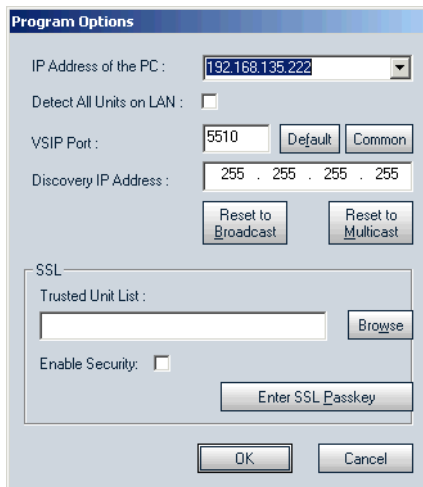
To work properly, units on the same network must have unique IP addresses. The encoder will not prevent you from entering a duplicate address. However, its system status LED will turn to flashing red and it will default to an APIPA address instead.

To set the parameters of a unit:

1. Power on the unit. If you are using the supplied power supply:
 - a. Plug the power supply wire with the dotted white lines in the GND pole at the back of the unit.
 - b. Plug the other power wire in the +12V pole at the back of the unit.For any other power supply, refer to the manufacturer documentation for the proper wiring scheme.
2. Connect the encoder to your computer with a crossed network cable or with two straight-through network cables going through a switch. Use the devices' RJ45 ports.
3. Start Device Configurator and log in with your password (the default one is *dvte/*).

4. From the General tab, click **Program Options**.

The Program Options window appears.

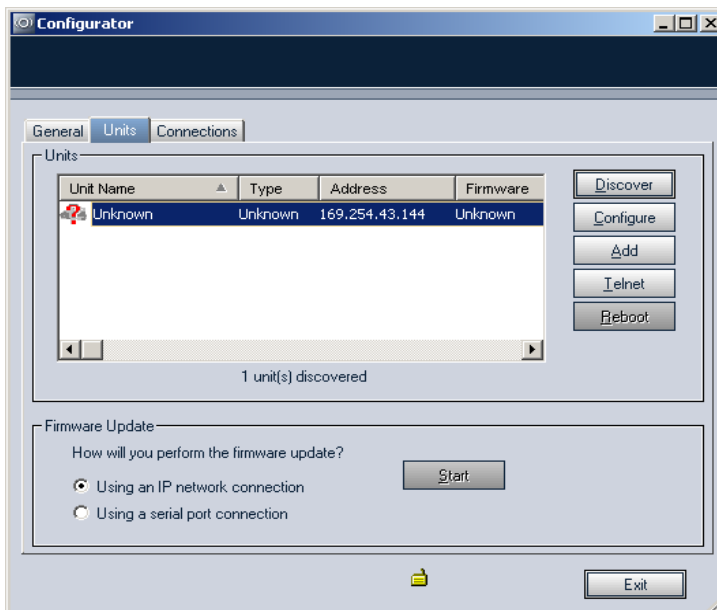


The Program Options dialog box contains the following fields and controls:

- IP Address of the PC: 192.168.135.222
- Detect All Units on LAN: ☐
- VSIP Port: 5510 (with Default and Common buttons)
- Discovery IP Address: 255 . 255 . 255 . 255 (with Reset to Broadcast and Reset to Multicast buttons)
- SSL section:
 - Trusted Unit List: (empty text box with Browse button)
 - Enable Security: ☐
 - Enter SSL Passkey: (text box)
- OK and Cancel buttons at the bottom.

5. Checkmark **Detect All Units on LAN**.
6. Ensure that the VSIP Port value is 5510; otherwise, click **Default**.
7. Ensure that the Discovery IP Address is 255.255.255.255; otherwise, click **Reset to Broadcast**.
8. Click **OK**.
9. Choose the Units tab, then click **Discover**.

A unit of type "Unknown" with a 169.254.X.Y IP address should appear in the list; it corresponds to your new unit.



The Configurator window shows the Units tab with the following table:

Unit Name	Type	Address	Firmware
Unknown	Unknown	169.254.43.144	Unknown

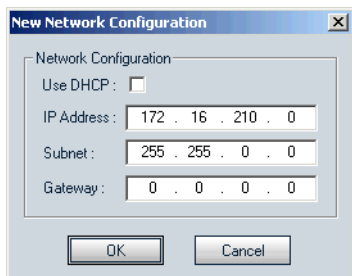
Buttons on the right: Discover, Configure, Add, Telnet, Reboot. Status: 1 unit(s) discovered.

Firmware Update section:
How will you perform the firmware update?
☒ Using an IP network connection
☐ Using a serial port connection
Start button

Exit button at the bottom right.

- 10.** Select the unknown unit, then click **Configure**. In the *Reconfigure unit?* confirmation window, click **Yes**.

The New Network Configuration window appears.

A screenshot of a Windows-style dialog box titled "New Network Configuration". It contains a "Network Configuration" section with a "Use DHCP" checkbox (unchecked). Below it are three input fields: "IP Address" with the value "172 . 16 . 210 . 0", "Subnet" with "255 . 255 . 0 . 0", and "Gateway" with "0 . 0 . 0 . 0". At the bottom are "OK" and "Cancel" buttons.

- 11.** To use DHCP (Dynamic Host Configuration Protocol), checkmark **Use DHCP**. Otherwise, enter an IP address, subnet mask, and gateway for the unit, as provided by your network administrator.
- 12.** Click **OK**.

The unit should reboot with its new network configuration.

- 13.** In the Units tab, click **Discover**.

The new 7600 Multi-Port Series unit should appear.

The initial configuration of the unit is now complete. You can configure the unit further with either Device Configurator or Latitude NVMS. See the products' user manuals for instructions.

Installing the Unit

When your unit is successfully configured, it is ready to be installed in its final location.

To install the unit:

1. Plug the video cable of the cameras to the video input connectors on the unit.
2. Power the unit with a 12 VDC power supply, then plug a straight-through network cable to the RJ-45 Ethernet connector and to your network socket.
3. Connect the serial port of the unit to the target device, if applicable.

Connecting to the Serial Ports

The 7600 Multi-Port Series unit has connectors for two serial ports: RS-232 and RS-422/485.

RS-232

Use the following wiring scheme to plug a serial cable to the DB-9 connector in the front of the unit:

DB-9 pin number	Cable signal name
2	RxD
3	TxD
5	Signal ground
7	RTS
8	CTS

RS-422/485

Most target devices (cameras and keyboards) use the RS-422/485 protocol for communication. Many scenarios are available to connect multiple cameras to a single, multi-input unit.

To use the RS-422/485 functionality, you have to connect a twisted pair cable to the top multipole connector in the back of the unit. The connector gives access to the Tx+, Tx-, Rx+, Rx-, and ground signals.

To properly connect an RS-422 or RS-485 serial device using four wires, use the following wiring scheme:

Target device connector	7600 Multi-Port Series connector
Tx+	Tx+
Tx-	Tx-
Rx+	Rx+
Rx-	Rx-
ground	ground

For an RS-422 or RS-485 connection using only two wires, use the following wiring scheme:

Target device connector	7600 Multi-Port Series connector
Rx+	Rx+
Rx-	Rx-
ground	ground

A typical connection of a multidrop RS-485 network (many units sharing the same line) is presented in Appendix B on page 28.

Configuring the I/Os

The input/output features on the multipole connectors on the back of the unit are used for alarms and audio control. All units in the 7600 Multi-Port Series include 12 input and 2 output dry-contact terminals; they have no preset purpose.

Note: The second output cannot receive signals from an input of a remote unit.

You can perform audio and alarm configuration through the Latitude NVMS AdminCenter. Audio is bidirectional on the 7608E, the 7612E with one audio input, and the 7624E; it is unidirectional on the 7612E with 12 audio inputs.

On the 7612E unit with 12 audio inputs, you may have to manually set the bias for each input to make sure the plugged microphone works. Check the microphone's specifications for the required voltage.

Warning: It is strongly recommended to check the current bias for each audio input on which you connect a microphone. An incorrect bias value or bias state may damage your equipment.

To set the bias parameters of the audio inputs on a 7612E unit with 12 audio inputs:

1. Open the command line interface (CLI) of the unit.
For the procedure, see Appendix E on page 31.
2. Go into the **Advanced > Audio > Input x** menu.
3. If your microphone requires a bias:
 - a. In the Bias parameter, enter the required voltage.
 - b. Set the bias state to **Enabled**.
4. If your microphone does not require a bias, set the bias state to **Disabled**.
5. Save your settings and exit the CLI.

Performing a Hardware Reset

Performing a hardware reset assigns the factory default settings to the parameters of the unit (listed in Appendix A on page 14). All user-defined values are therefore lost. Following a reset, you will need to reprogram the 7600 Multi-Port Series unit (for instance, its IP address and VSIP port) for proper operation within its network.

To perform a hardware reset:

1. Press and hold the Reset button located on the front panel of the unit.
The system status LED should begin flashing red very rapidly.
2. Hold the button for an additional five seconds, until the LED turns off. The unit will then reboot with the default parameters.

Status LEDs

The 7600 Multi-Port Series units have one system status LED and 8, 12, or 24 video status LEDs. All these LEDs are bicolor (red-green).

The system status LED provides detailed information on the current state of the unit.

Condition	Indication
Steady red	The unit is powering up.
Flashing red (1 sec. intervals)	The IP address of the unit is already assigned to another unit in the network.
Flashing green (3 sec. intervals)	The firmware has started, but the unit is not connected to the network.
Flashing green (1 sec. intervals)	The firmware has started, the unit is connected to the network, but no audio or serial data is being transmitted.
Flashing green (0.2 sec. intervals)	The firmware has started, the unit is connected to the network, and audio and/or serial data is being transmitted.
Flashing green-red (1 sec. intervals)	The unit is undergoing a firmware update.
Flashing red (0.1 sec. intervals)	The unit is being identified.

The following power-up conditions on the system status LED are abnormal:

- LED not lit—Check the power supply and cabling. If power is available and the LED stays off, call DVTel technical support for assistance.
- Steady red LED—There is an internal error that prevents the unit from starting normally. Power down, then power the unit back up once. If the condition persists, proceed to do a firmware update (for details, refer to the *Device Configurator User Manual*). If the update fails or the condition persists after the update, call DVTel technical support.
- Flashing red LED (2 second intervals)—There is an internal error that prevents the unit from operating normally. This situation may happen after a firmware update or after the first boot-up. Power down the unit and call DVTel technical support.

The video status LEDs have the following behavior:

Condition	Indication
3 red blinks every 2 seconds	A video source has not been detected and video is not being transmitted.
Steady green	A video source is connected to the corresponding input but video is not being transmitted.
Flashing green (0.2 sec. interval)	A video source is connected to the corresponding input and video is transmitted.
Flashing red (0.2 sec. interval)	A video source has not been detected but video is being transmitted.

A

Factory Default Configuration

The 7600 Multi-Port Series encoders are programmed at the factory with the following configuration:

Type	Configuration
Serial port	<ul style="list-style-type: none"> ■ Bit rate: 4800 bauds ■ Parity: none ■ RS-422/485 operating mode: RS-422 4-wire
Access management	<ul style="list-style-type: none"> ■ User accounts: Disabled ■ Telnet sessions: Enabled ■ IP firmware update: Enabled ■ Global security profile: Disabled ■ SSL passkey: <empty>
Network	<ul style="list-style-type: none"> ■ DHCP configuration: Disabled ■ IP address: 169.254.*.* (MAC address of the unit) ■ Subnet mask: 255.255.0.0 ■ Gateway: 169.254.*.* (MAC address of the unit)
Video settings (North America)	<ul style="list-style-type: none"> ■ Target frame rate: 30 fps ■ Target bit rate: 800 kbps ■ Resolution: CIF (352 x 240) ■ Maximum quantizer: 10 ■ Video standard: NTSC
VSIP	<ul style="list-style-type: none"> ■ VSIP Port: 5510 ■ VSIP Multicast IP Address: 224.16.32.1 ■ VSIP Discovery IP Address: 255.255.255.255

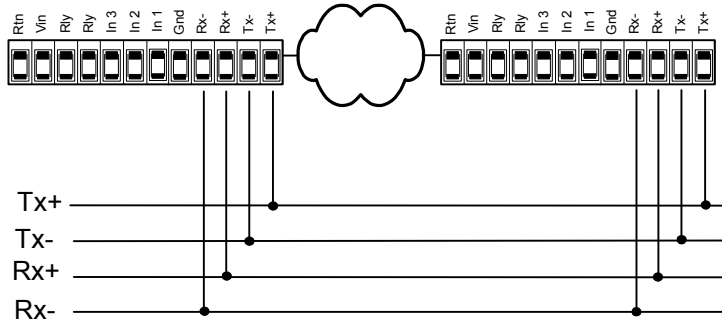
B

RS-422/485 Multidrop Connections

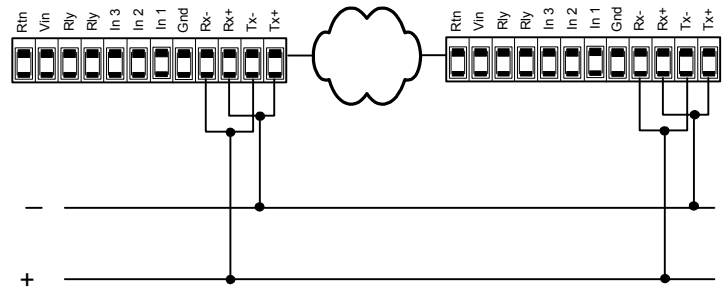
Two multidrop configurations are available:

- Four-wire
- Two-wire

The four-wire configuration, which can be used for both RS-422 and RS-485, is:



The two-wire configuration, for RS-485 only, is:





DTE and DCE Connections

Before connecting a DVTel unit to other serial equipment, you need to determine if they are DTE (data terminal equipment) or DCE (data communication equipment).

Here are examples of both equipment types:

- DCE—DVTel units, modems
- DTE—Computers, switches, multiplexers, cameras, keyboards

You need to know the equipment type of the other serial device to connect it correctly to the 7600 Multi-Port Series unit, which is a DCE.

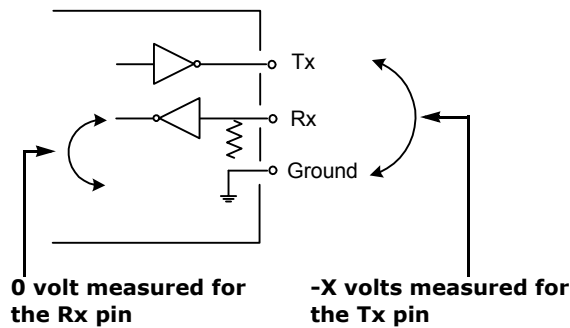
In the following descriptions:

- Voltage is measured when no data is transferred on the Rx and Tx pins.
- *-X volts* represents a negative voltage value.

Data Terminal Equipment

DTE modules have the following electrical-level setup:

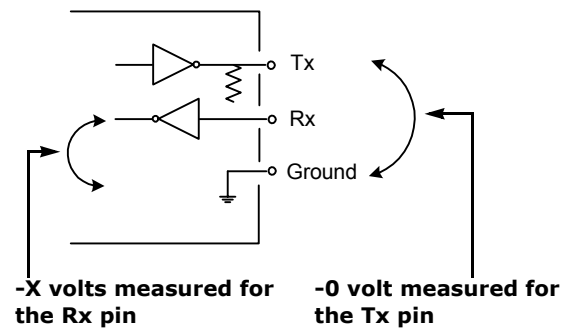
Pin number	Signal	Measured voltage
3	Tx	-X volts
2	Rx	0 volt



Data Communication Equipment

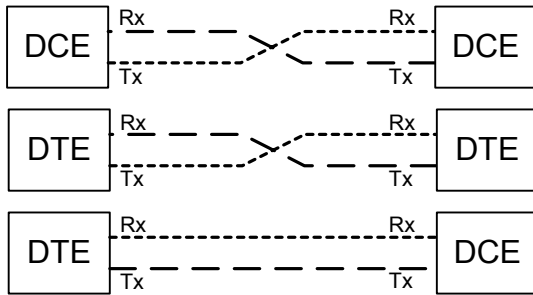
DCE modules have the following electrical-level setup:

Pin number	Signal	Measured voltage
3	Tx	0 volt
2	Rx	-X volts



Connecting DTE and DCE

When connecting two modules of the same type, you have to cross the data wires to create proper communication. On the other hand, when connecting a DTE with a DCE, a straight cable is required.





DHCP Support and APIPA Service

DHCP (dynamic host configuration protocol) allows devices and computers connected to a network to automatically get a valid IP configuration from a dedicated server.

The APIPA (automatic private IP addressing) service, available on the Windows operating systems, enables a device to assign itself a temporary IP address.

At startup, a unit searches for a valid IP network configuration. The unit requires this configuration prior to starting its functions. The network configuration for DVTel units consists of:

- An IP address
- A subnet mask
- A gateway

The unit first searches its local memory. If no configuration is found, it tries to contact a DHCP server. If DHCP configuration fails, either because the unit cannot find a server or because it cannot obtain a configuration within one minute from the server it does find, the unit assigns itself temporary network settings based on the APIPA service.

A unit in APIPA mode does not reside on the same subnet as the other devices on the IP network; therefore, it may not be able to see them or be visible to them. Units use the following temporary APIPA configuration:

- IP address: 169.254. *. *
- Subnet mask: 255.255.0.0
- Gateway: 169.254. *. *

The *. * portion is based on the MAC address of the unit.

A unit is in APIPA mode:

- The first time it boots up
- After receiving a duplicate IP address
- After a factory reset
- When the DHCP server does not have any available IP addresses

DHCP configuration is disabled:

- After a firmware upgrade
- After a factory reset



CLI Access

You may need to access the command line interface (CLI) of a unit to perform troubleshooting tasks, typically with the assistance of a DVTel, Inc. technical support specialist. The CLI is hierarchically organized, with menus, sub-menus, and individual options representing configuration parameters.

You can access the CLI in the following ways:

- With a network connection and the Telnet utility
- With a serial connection and the Device Configurator utility

Network Connection

You can use the Telnet utility, through Device Configurator, to open the command line interface of the unit.

Note: Ensure that your computer and the 7600 Multi-Port Series unit are in the same IP subnet.

To enter the CLI with Telnet:

1. Launch Device Configurator.
2. In the Units tab, discover the units.
3. Select the desired unit, then click **Telnet**.

The CLI main menu should appear in the Console window.

The CLI has a timeout that is triggered after three minutes of inactivity. When the timeout occurs:

- ☐ You lose access to the command line.
 - ☐ The "Thank you for using the DVTel, Inc. CLI" message appears at the command line.
 - ☐ The DVTel Console window becomes disabled.
 - ☐ The Disconnect button switches to Connect.
4. To reactivate the CLI after a timeout, click **Connect**.
 5. To work through the CLI menu structure, follow these guidelines:
 - ☐ To execute a command or open a menu, type in the corresponding letter or number, then press **Enter**.
 - ☐ Entering **p** returns you to the previous menu.
 6. To end the CLI work session:
 - a. Save the settings by entering **s** at the main menu, then pressing **Enter**.
 - b. Exit the CLI by entering **q** at the main menu, then pressing **Enter**.
Depending on the changed settings, the unit may perform a soft boot.
 - c. Close the DVTel Console window.

Warning: Do not use the Disconnect button to exit the CLI. Clicking it does not free the RS-232 connection and does not save your settings.

Serial Connection

You can use the Device Configurator console to easily access the CLI through a serial connection.

To access the CLI with the Device Configurator console:

- 1.** Connect the 7600 Multi-Port Series unit to a COM port of the computer using a serial cable.
- 2.** Start Device Configurator.
The Device Configurator window appears.
- 3.** From the General tab, click **Console**.
The Console window should appear.
- 4.** In the Connect using list, select the COM port used to communicate with the unit.
- 5.** Click **Connect**.
The CLI main menu appears.

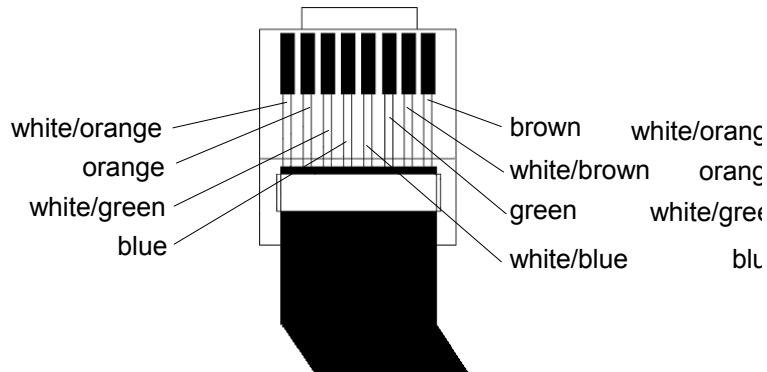


RJ-45 Ethernet Cables

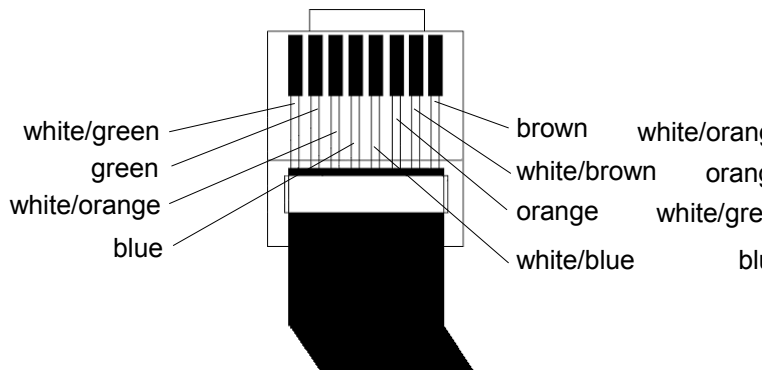
Depending on whether the 7600 Multi-Port Series unit is integrated into a network or not, the Ethernet cable required to connect to it varies:

- If on a network, use a straight-through cable.
- To link it directly to a computer, use a crossover cable.

Here is the bottom view of the RJ-45 connectors on a straight-through cable:



Here is the bottom view of the RJ-45 connectors on a crossover cable:



G

Technical Specifications

The following table details the 7600 Multi-Port Series' technical specifications:

Video	Compression	MPEG-4-based
	Frame rate	Up to 30 frames per second in NTSC (25 frames in PAL), programmable (full motion)
	Input	7608E: 8 composites, 1 Vpp into 75 ohms 7612E: 12 composites, 1 Vpp into 75 ohms 7624E: 24 composites, 1 Vpp into 75 ohms
	Resolution	Scalable from 352 x 240 to 704 x 480 NTSC pixels (352 x 288 to 704 x 576 PAL pixels)
	Standard	NTSC or PAL
	Connectors	BNC female
	Bandwidth	Configurable between 30 kbps and 4 Mbps
Serial Port	Electrical levels	Port 1: RS-232 (230 kbps max.) Port 2: RS-422/485 2/4 wires (230 kbps max.)
	Connectors	Port 1: DB-9 female Port 2: pluggable screw-terminal strip
	Operating mode	Transparent serial port supporting any asynchronous serial protocol
Alarm and audio	Alarm input	12 dry contacts
	Alarm output	2 relay contacts (48V AC/DC at 100 mA max.)
	Bidirectional audio	Input: -46 to -3 dBV into 1 kOhm Output: -46 to -3 dBV into 16 ohms min.
	Unidirectional audio	Input: -46 to -3 dBV into 30 kOhm Programmable bias: 0-9V DC 16-bit resolution 8, 16, or 24 KHz sampling rate
	Audio connectors	7608E, 7612E, 7624E: One set of 0.14 inch (3.5 mm) input and output stereo jacks or 7612E: 12 0.14 inch (3.5 mm) input stereo jacks
Network	Interface	Ethernet 10/100Base-T
	Connector	RJ-45 jack
	Protocols	Transport: RTP/IP, UDP/IP, TCP/IP, multicast IP Others: DNS and DHCP client
	Security	SSL-based authentication
Power	Supply voltage	12V DC \pm 10%
	Consumption	7608E: 22W max. (1.8A at 12V DC) 7612E, 7624E: 24W max. (2A at 12V DC)
Physical	Enclosure	Metal case with flange mount (black color)
	Size	17L x 6.1W x 1.7H inches (431.8L x 154.9W x 43.2H mm)
	Weight	5.6 lb (2.6 kg)
	Environment	32°F to 122°F (0°C to 50°C)
	Humidity	95% non condensing at 122°F (50°C)
Certification/ Regulation	USA	FCC part 15 (subpart B, class A)
	Canada	ICES-003/NMB-003 Class A
	Europe	CE marked, EN 55022:1998 Class A, EN 55024:1998
Management	Configuration	Local via the serial port using any ASCII terminal Remote using Device Configurator, Latitude NVMS, or Telnet

Glossary

This glossary is common to the DVTel 7500 and 7600 Series products.

Access Point A device acting as a communication switch for connecting wireless units to a wired LAN. Access points are mainly used with wireless transmitter units to transfer wireless content onto the wired IP network.

APIPA (Automatic Private IP Addressing) A feature of Windows-based operating systems that enables a device to automatically assign itself an IP address when there is no dynamic host configuration protocol (DHCP) server available to perform that function. Also known as *AutoIP*.

CCTV (Closed Circuit Television) A television system in which signals are not publicly distributed; cameras are connected to television monitors in a limited area such as a store, an office building, or on a college campus. CCTV is commonly used in surveillance systems.

CIF (Common Image Format) A video format that easily supports both NTSC and PAL signals. Many CIF flavors are available, such as CIF, QCIF, 2CIF, and 4CIF. Each flavor corresponds to a specific number of lines and columns per video frame.

CLI (Command Line Interface) A textual user interface in which the user responds to a prompt by typing a command.

Codec (Coder/Decoder) A device that encodes or decodes a signal.

DCE (Data Communication Equipment) In an RS-232 communication channel, a device that connects to the RS-232 interface. DVTel units and modems are DCE.

Decoder See *Receiver*.

DHCP (Dynamic Host Configuration Protocol) A communication protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in a network.

DTE (Data Terminal Equipment) In an RS-232 communication channel, the device to which the RS-232 interface connects. Computers, switches, multiplexers, cameras, and keyboards are DTE.

DVR (Digital Video Recorder) A device (usually a computer) that acts like a VCR in that it has the ability to record and play back video images. The DVR takes the feed from a camera and records it into a digital format on a storage device which is most commonly the hard drive.

Encoder See *Transmitter*.

Ethernet A local-area network (LAN) architecture using a bus or star topology and supporting data transfer rates of 10 Mbps. It is one of the most widely implemented LAN standards. The 802.11 protocols are often referred to as "wireless Ethernet."

Firmware Software that is stored in read-only memory (ROM) or programmable ROM (PROM), thus becoming a permanent part of a computing device.

IP (Internet Protocol) The network layer for the TCP/IP protocol suite widely used on Ethernet networks.

LAN (Local Area Network) A computer network that spans a relatively small area. A LAN can connect workstations, personal computers, and surveillance equipment (like video servers). See also *WAN*.

MPEG-4 A graphics and video lossy compression algorithm standard that is derived from MPEG-1, MPEG-2, and H.263. MPEG-4 extends these earlier algorithms with synthesis of speech and video, fractal compression, computer visualization, and artificial intelligence-based image processing techniques.

Multicast Communication between a single sender and multiple receivers on a network; the devices can be located across multiple subnets, but not through the Internet. Multicast is a set of protocols using UDP/IP for transport.

NTSC (National Television Standards Committee) The North American standard (525-line interlaced raster-scanned video) for the generation, transmission, and reception of television signals. In addition to North America, the NTSC standard is used in Central America, a number of South American countries, and some Asian countries, including Japan. Compare with *PAL*.

NTP (Network Time Protocol) A protocol designed to synchronize the clocks of devices over a network.

OSD (On-Screen Display) Status information displayed on the video monitor connected to a receiver unit.

PAL (Phase Alternation by Line) A television signal standard (625 lines, 50 Hz, 220V primary power) used in the United Kingdom, much of western Europe, several South American countries, some Middle East and Asian countries, several African countries, Australia, New Zealand, and other Pacific island countries. Compare with *NTSC*.

PTL (Push-to-Listen) In a two-way system, the communication mode in which the listener must push a button while listening.

PTT (Push-to-Talk) In a two-way system, the communication mode in which the talker must push a button while talking.

PTZ Camera (Pan-Tilt-Zoom) An electronic camera that can be rotated left, right, up, or down as well as zoomed in or out.

Receiver A device converting a digital video signal into an analog form. Also called *decoder*.

RS-232 A standard interface approved by the Electronic Industries Alliance (EIA) for connecting serial devices.

RS-422 A standard interface approved by the Electronic Industries Alliance (EIA) for connecting serial devices, designed to replace the older RS-232 standard because it supports higher data rates and greater immunity to electrical interference.

RS-485 An Electronics Industry Alliance (EIA) standard for multipoint communications.

7500 Series The DVTel series of standard-definition video servers (receivers and transmitters) designed for video monitoring and surveillance over IP networks. The transmitters in the series offer from one to eight video inputs.

7600 Series The newest DVTel series of high-definition video transmitters designed for video monitoring and surveillance over IP networks, offering DVD-quality video and power over Ethernet. The transmitter in the series offers one video input and web access.

Device Configurator A proprietary graphical program used to configure and update the firmware of video server and outdoor wireless bridge units.

Serial Port An interface that can be used for serial communication, in which only one bit is transmitted at a time. A serial port is a general-purpose interface that can be used for almost any type of device.

SSL (Secure Sockets Layer) A commonly used protocol developed by Netscape for transmitting private documents via the Internet. SSL works by using a public key to encrypt data that is transferred over the SSL connection. The SSL protocol secures the following data: I/O, serial port, and VSIP communication; it does not apply to audio and video transmission.

Transmitter A device sending video signals captured with a connected camera or dome to a receiver. The transmitter converts the analog signal into a digital form before transmitting it. Also called *encoder*.

Video Server A unit that transmits or receives video signals through an IP network (i.e. an encoder or decoder).

VSIP (Video Services over IP) A proprietary communication protocol used for sending messages between a computer and an encoder/decoder, or between two such units.

WAN (Wide Area Network) A computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local area networks (LANs).

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Compliance

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Statement

This Class A digital apparatus complies with Canadian ICES-003.

EN 55022 Statement

This is to certify that the DVTel Models 7600 Multi-Port Series and 7612E Ethernet video servers are shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/ECC, Article 4a. Conformity is declared by the application of EN55022 Class A (CISPR 22).